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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,650	07/30/2003	Tsutomu Kadotani	Q76784	6845
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SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER DUONG, THOI V	
			ART UNIT 2871	PAPER NUMBER
			MAIL DATE 08/10/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/629,650

Applicant(s)

KADOTANI, TSUTOMU

Examiner

Thoi V. Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5-10 and 21-23 ~~is/are~~ pending in the application.
- 4a) Of the above claim(s) 11-20 ~~is/are~~ withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-10 and 21-23 ~~is/are~~ rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the Amendment filed June 01, 2007.

Accordingly, claims 1 and 22 were amended, claims 2-4 were cancelled, and claims 11-20 were withdrawn. Currently, claims 1 and 5-23 are pending in this application and claims 1, 5-10 and 21-23 are considered in this office action.

Response to Arguments

2. Applicant's arguments with respect to claims 1 and 22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 7, 10 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Kohama et al. (Kohama, US 5,946,070).

Re claim 1, as shown in Figs. 24 and 25, Kohama discloses a LCD device comprising:

- a first substrate 10 on which pixels are arranged;
- a second substrate 20 coupled to the first substrate 1 with a sealing member 32 in such a way as to form a gap between the first and second substrates;
- a liquid-crystal layer 50 formed in the gap, the liquid crystal layer being confined by the sealing member 32; and

spacers 40 arranged in the liquid crystal layer,
wherein the first substrate 10 has a display region R1 for displaying images (col. 4, lines 34-44); the display region R1 includes the pixels (col. 5, lines 10-26);

wherein the first substrate 10 has a non-display region R2 formed outside the display region R1, the non-display region R2 being located between the display region R1 and the sealing member 32 (see also Figs. 1 and 2); and

wherein the spacers 40 are located in a first part of the liquid-crystal layer 50 corresponds to the display region R1 while none of the spacers are located in a second part of the liquid-crystal layer 50 corresponds to the non-display region R2 (Fig. 25).

The LCD device further comprises a depression formed on an inner surface of the first substrate 10 as shown in Fig. 25, wherein the depression is located in the second part of the liquid crystal layer 50, and substantially vacant except for the liquid crystal layer.

Since the structure of the LCD device recited in Kohama is substantially identical to that of the claim, claimed properties or functions are presumed to be inherent (see MPEP 2112.01). Therefore, the depression of Kohama also constitutes a buffer space which receives extra liquid crystal from the liquid crystal layer.

Re claim 22, as shown in Figs. 25 and 26, Kohama discloses an LCD device comprising:

a first substrate 10;

pixels disposed on the first substrate 1 (col. 5, lines 10-26);

a second substrate 20 coupled to the first substrate 10;

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a sealing member 32 creating a gap between the first substrate 10 and the second substrate 20;

a liquid crystal layer 50 disposed in the gap; and

spacers 40 disposed in the liquid crystal layer,

wherein the LCD device comprises a display region R1 for displaying images and a non-display region R2 (outside the active region) which does not display images (col. 4, lines 34-44);

wherein the display region includes the pixels (col. 5, lines 10-26); and

wherein the non-display region R2 is disposed between the display region and the sealing member 32 (see also Figs. 1 and 2).

The LCD device further comprises a depression which is formed in the non-display region R2 on the first substrate 10 to receive the liquid crystal layer, wherein the depression is substantially vacant except for the liquid crystal layer as shown in Fig. 25.

Since the structure of the LCD device recited in Kohama is substantially identical to that of the claim, claimed properties or functions are presumed to be inherent (see MPEP 2112.01). Therefore, the depression of Kohama also receives excess liquid crystal from the liquid crystal layer 50 so that the gap between the first substrate 10 and the second substrate 20 is substantially uniform in the display region R1.

Re claim 7, Kohama suggests that one of the first and second substrates comprises a transparent plate (col. 4, lines 46-49) and the depression is formed on an inner surface of the plate as shown in Fig. 25.

Re claim 10, as shown in Fig. 25, the depression forms a step between the display region R1 and the non-display region R2.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5, 6 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohama et al. (Kohama, US 5,946,070) in view of Jun et al. (Jun, US 6,873,391 B2).

Re claim 5, Kohama does not disclose the structure of the device in detail as well as a dielectric layer formed on the first substrate to cover the TFTs and the pixels, wherein the depression is formed in the dielectric layer.

As shown in Figs. 5 and 6, Jun discloses that TFTs are arranged on the first substrate 1 in such a way as to be electrically connected to the respective pixels, and a dielectric layer 12 (patterned material) is formed on the first substrate 1 to cover the TFTs and the pixels; and wherein the depression 13 (groove) is formed in the dielectric layer 12 (col. 3, lines 30-45).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Kohama with the teaching of Yun by forming a dielectric layer on the first substrate to cover the TFTs and the pixels,

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wherein the depression is formed in the dielectric layer in order to improve fabrication efficiency and yield (col. 4, line 52).

Re claim 6, Jun also suggests that a dielectric layer is formed on the second substrate; and wherein the depression is formed in the dielectric layer (col. 4, lines 30-33-43).

Re claim 21, the LCD device of Jun further comprises a dielectric overcoat layer on at least a portion of the second substrate; wherein the dielectric overcoat layer comprising a depression is formed by photolithography technique (col. 3, lines 37-39 and col. 4, lines 1-8 and 30-43). Accordingly, it is obvious that at least a portion of the dielectric overcoat layer in the second part of the liquid-crystal layer is selectively etched by photolithography technique to remove portions of the dielectric overcoat layer and form the depression.

However, as to the product-by-process limitation "wherein at least a portion of the dielectric layer is selectively etched to remove portions of the dielectric overcoat layer and form the depression" of claim 21, it has been recognized that "Even through product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process". *In re Thorpe*, 227 USPQ 964,966 (Fed. Cir. 1985). See also MPEP 2113.

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7. Claims 8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohama et al. (Kohama, US 5,946,070) in view of Kijima et al. (Kijima, US 6,259,500 B1).

The LCD device of Kohama as described above includes all that is recited in claims 8 and 23 except for the depression having a height H satisfying a relationship of

$$H \Rightarrow (1/2) \times (1000 + L) \times [0.02d + [L \times (0.02d/1000)]]/L \text{ (micrometer),}$$

when the non-display region has a width L and the gap in the display region has an average value d.

Kijima discloses an LCD device having spacers formed in the display region and none of the spacers being formed in the non-display region (Fig. 8b).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have the relationship $H \Rightarrow (1/2) \times (1000 + L) \times [0.02d + [L \times (0.02d/1000)]]/L$ satisfied (col. 16, lines 17-46), since one would be motivated to suppress the level of non-uniformity due to variation in cell thickness to an acceptable level so that a convex/concave profile can be provided (col. 16, lines 17-47). Ultimately this serves to help realize a uniform cell thickness across the entire panel and improve display quality (col. 5, lines 7-29).

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kohama et al. (Kohama, US 5,946,070) in view of Kurauchi et al. (Kurauchi, US 5,917,572).

The LCD device of Kohama as described above includes all that is recited in claim 9 except for the spacers being pole-shaped and formed on one of the first and second substrates.

As shown in Figs. 6 and 7, Kurauchi discloses a LCD comprising spacers 83 being pole-shaped (pillar-shaped spacers) and formed on a substrate 81 (col. 9, lines 2-5).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD of Kohama with the teaching of Kurauchi by having the spacers being pole-shaped and formed on one of the first and second substrates so as to obtain a uniform gap and enhance display performance (col. 2, lines 54-59).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms, can be reached at (571) 272-1787.

Thoi V. Duong – Primary Examiner

July 26, 2007

A handwritten signature in cursive script, appearing to read 'Thoi V. Duong', is written over the date.